The Report Committee for Cassie Lynn Davis
Certifies that this is the approved version of the following Report:

Food Pantry Analysis for Travis County, Texas: Availability & Access to Food

APPROVED BY
SUPERVISING COMMITTEE:

Catherine Weaver, Supervisor

Alexandra van den Berg, Co-Supervisor

Food Pantry Analysis for Travis County, Texas: Availability & Access to Food

by

Cassie Lynn Davis

Report

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Dedication

This thesis work is dedicated to my mother, Melissa Davis, who has been my support system my whole life, and has also has read everything I have ever written during my higher education experience. She endured food insecurity while growing up. If this work can make one less person in Travis County/City of Austin have access to healthy food options then that is a step in the right direction. My mother has shaped the way I look at public health and policy. She has instilled in me to do everything with the intention of serving others. Thank you, Mom, for your continuous support, I would not be where I am today without you!

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Abstract

Food Pantry Analysis for Travis County, Texas: Availability & Access to Food

Cassie Lynn Davis, MPAff, MPH

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Supervisor: Catherine Weaver

Co-supervisor: Alexandra van den Berg

Food insecurity in Travis County, Texas is higher than the national and state average. Food insecurity can cause negative cognitive developmental effects in children and lead to chronic health conditions in adults, such as diabetes and hypertension. Private food assistance agencies, known as food pantries, can provide relief to low-income households that lack the purchasing power to afford or buy enough food. This study aimed to determine the geographic and transit accessibility of food pantries located in Travis County, Texas. In addition, a food pantry quality index was used to measure the quality of specific food pantries. Using demographic data on food pantry location in Travis County, differences between the distance of a food pantry to the nearest census block group were assessed by poverty level. The findings indicate that the location of a food pantry is closer to areas of need. For every 1 kilometer increase in distance from the nearest pantry, there are a 0.86 lower odds of poverty at the census block level (p-value=0.00). The range of quality scores for the food pantries in the specific food pantry sample reveals the variation in quality of food pantries currently operating in Travis County, Texas. Although food

pantries were found to be located closer to vulnerable neighborhoods, there is still inequality in access and quality to food pantries for individuals who live in less vulnerable neighborhoods but are still experiencing poverty.

Table of Contents

List of Tables

List of Figures

Background

Food security is defined as a state of being when "all people, at all times have both physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences to live an active, healthy life" (FAO, 2012). According to 2016 data, 41.2 million individuals in the United States (U.S.), 12.3 percent, experience food insecurity. In Texas, the rate is even higher at 14.3 percent (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2016). Food security is a complex issue with multiple dimensions with a variety of solutions. One potential source to alleviate food insecurity is private food assistance agencies, specifically food pantries, commonly cited as a form of support for food insecure households (Bhattarai, Duffy, & Raymond, 2005; Duffy, 2007; Feeding America, 2011; Kicinski, 2012; Lentz & Patel, 2015; Babic, Dys, Jake, O'Leary, Waxman & Yarrow, 2015). When the food pantry provides healthy food products, food pantry clients have better health outcome. Two pillars of food security, access and availability, are used to determine geographic accessibility of food pantries, as well as self-reported walkability/transit accessibility of the food pantry. In addition, this paper offers a food pantry quality index to measure the availability of fresh produce and protein in food pantries located in Travis County, Texas.

THE DIMENSIONS OF FOOD SECURITY

Food security includes four major components: availability, access, utilization, and stability (Figure 1). The research provided by this project will address two of these four components: access and availability (FAO, 2013). Access to food relies on economic and physical ability to attain healthy foods. Availability of food plays a large role in adequate

access, because when people have healthy food available nearby, they can, in theory, improve their diets. This study does not address two additional and important pillars of food security: 1) utilization, which considers how well an individual utilizes the food they can access; and 2) stability which considers the ability of achieving the other three dimensions continuously over time to remain food secure (FAO, 2012).

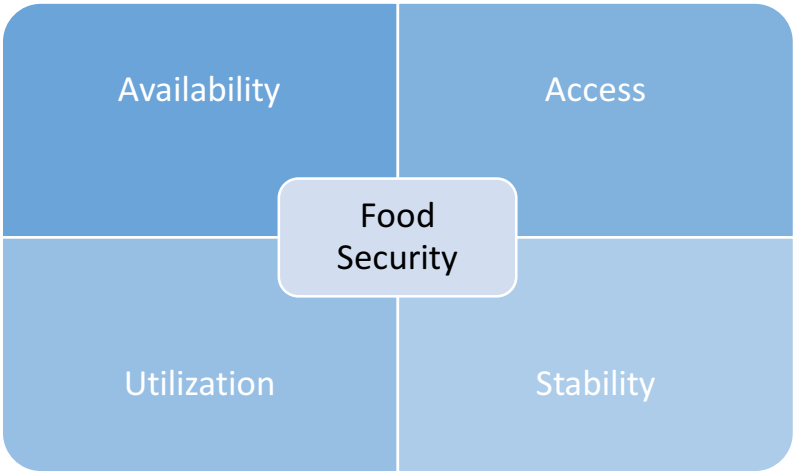

Figure 1. The Four Dimensions of Food Security

In contrast to food security, one can be food insecure, which is defined as a state of being when access to adequate food is limited by a lack of financial resources, which affects a household's ability to purchase food (Coleman-Jensen et al., 2016). Household economic resources such as employment and income are likely to determine if a household is food insecure. For children living below 200% FPL they are more likely to live in a food insecure household, which can negatively affect a child's health and development from birth and later in life (Morrissey, Oellerich, Meade, Simms, and Stock, 2016). For adults living at or less than 200 percent of the federal poverty line (FPL) who are food insecure have a higher probability of chronic conditions, such as diabetes and hypertension than

those living above 200 percent FPL threshold (Seligman, Laraia, Kushel, 2010; Gregory & Coleman-Jensen, 2017). As a result, the effects of food insecurity can negatively influence the health trajectory of low-income individuals.

FOOD INSECURITY IN TRAVIS COUNTY, TEXAS

Despite the higher prevalence in Texas when compared to the national figures, the state of Texas has registered decreases in the prevalence of food insecurity in the past 5 years, going from 18 percent in 2011-2013 to 14 percent in 2014-2016. (Coleman-Jensen & et. al, 2017). At the same time, urban cities, such as Austin, experienced food insecurity at much higher rates, than the state-wide average. Most recent data reports indicate that 17 percent of Travis County residents are living in food insecure homes (Community Advancement Network, 2016).

Poverty is defined by the inability of a household's income to meet basic needs such as food, clothing, and shelter and is measured with an income to needs ratio less than one (Ribar & Hamrick, 2003). Poverty has been positively correlated with food insufficiency finding that those with incomes below the poverty line were more likely to face food insufficiencies (Ribar & Hamrick, 2003). Poverty rates, as of 2015, in Travis County are at 13 percent. Poverty has been positively correlated with food insufficiency finding that those with incomes below the poverty line were more likely to face food insufficiencies (Ribar & Hamrick, 2003). The Center for Public Policy Priorities reports that for families to make ends meet in Austin, they must earn at least two times the federal poverty level (FPL) (Community Advancement Network, 2016). For a family of four in Travis County, they would need to make twice the FPL threshold of $25,100, meaning they would need to earn at least $50,200 to meet this recommendation (U.S. Department of Health & Human Services, 2018). Therefore, not all food insecure homes in Travis County

qualify for government assistance programs. The Mind the Meal Gap, a yearly study by Feeding America, shows 33 percent of Travis county's food insecure residents have incomes above the poverty level thresholds for eligibility for nutrition assistance programs (185 percent FPL), such as Supplemental Nutrition Assistance Program (SNAP) or Women, Infants, and Children (WIC) (Feeding America, 2015).

The poverty rate for both Hispanics (26 percent) and African Americans (23 percent) is twice that of the white population (9 percent) in Travis County (Community Advancement Network, 2015). Nationally, Latino and African American households experience higher rates of food insecurity, 22.5 percent for African American and 18.5 percent for Latino, twice that of white households (9.3 percent) (Coleman-Jensen & et. al, 2017). Due to the increased vulnerability of Latino and African American populations to food insecurity, where food pantries are located is important. Given Austin's changing demographics and neighborhoods, food pantries once serving vulnerable populations may be serving areas of less need.

Poverty, median household income, and race/ethnicity have been found to be associated to food insecurity (Morrissey, 2016, Seligman, Laraia, Kushel, 2010; Gregory & Coleman-Jensen, 2017). As a result, Figure 2 provides census block groups determined to be at risk for food insecurity. At risk is defined as a census block groups meeting three conditions: 1) median household income is less than $50,200, 2) the percentage of residents in a census block group living below the 200 percent FPL is greater than 50 percent, and 3) the percentage of residents in a census block group is majority Latino and/or African American. Based on these predictors we can highlight key areas where Travis County/Austin residents will be more likely to be vulnerable to food insecurity.

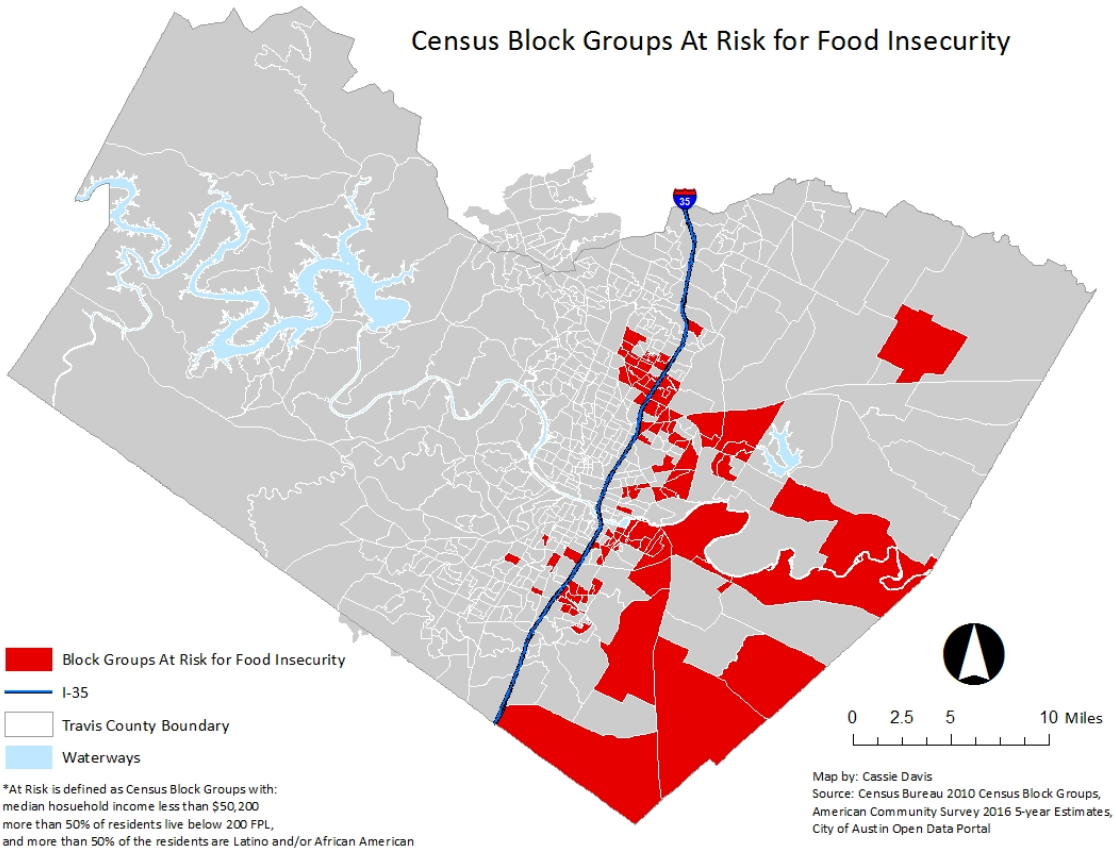

Figure 2. Map of Food Access Priority Areas, by Census Block Group.

PRIVATE FOOD ASSISTANCE

One approach to potentially reduce food security gaps is the use of private food assistance agencies, also known as Food Pantries. Private food assistance agencies are usually operated by non-profit organizations or churches, rather than federally funded programs. Most receive funding through private monetary donations, grants, and other non-profits (Daponte, 2000). A food pantry is a charitable donation agency that provides free food directly to individuals and their households with food and groceries to be used at home (Feeding America, 2011). Food pantries are usually under the umbrella of a local food

bank, which receives high volumes of donated food and grocery products from various sources, including local businesses and individual donations (Feeding America, 2011).

Food pantries were established by John van Hengel, the founder of Feeding America, to initially to address the prevalence of acute food insecurity, offering short-term relief in the presence of fluctuations in food prices or household incomes (FAO, 2012). However, research has found that food pantries are, in fact, treating chronic cases of food insecurity, or continuous food insecurity due to extended periods of poverty from inadequate access to financial resources (Lentz & Patel, 2015; FAO, 2012). That is, individuals and families using food pantries tend to be those living with food insecurity on a long-term basis. These families use food pantries as a habitual means of obtaining food. In North Central Austin, 60.8 percent of food pantry clients regularly seek food assistance from food pantries directly operated by the Central Texas Food Bank (Lentz & Patel, 2015).

FOOD PANTRY QUALITY

Food pantries, as they currently exist, are not a catch-all solution for food insecurity. Due to limited factors such as donations or storing capabilities, most food pantries provide non-perishable items that can feed clients, but that have limited nutritional quality (Shanks, 2017; Bush-Kaufman et.al, 2017). Food pantries find it challenging to provide fresh fruits and vegetables, and the effects can be seen in that food pantry clients tend to have an inadequate intake of fruits and vegetables (Simmet, et. al, 2017). The food available in a food pantry can limit its clients in terms of access to key nutrients and proteins, which they may also be unable to afford at their local grocery store. As researchers have found, food pantry clients report that they usually still must visit a grocery

store for fresh items such as meats and dairy, due to variations between food pantries on the availability of these products (Simmet, et. al, 2017). Both freezers and refrigerators help to increase the ability of a food pantry to provide fresh produce and proteins such as meat, eggs, and dairy (Bush-Kaufman et.al, 2017). A high-quality food pantry is one that has the capacity to serve nutrient-dense food such as fruit, vegetables, meats and dairy, having the capacity to store these food, and is easily accessible for clients. Low-quality food pantries are those that lack the capacity to serve nutrient-dense foods, lack storage capacity, and are not as accessible for clients. Therefore, improving food pantry quality, which would require expanding a food pantry's capacity to provide more nutrient-dense food, can help to provide food with higher nutritional quality.

GAPS IN KNOWLEDGE

Most studies have sought to understand food insecurity through geographic disparities in access to places to purchase food. For example, studies have focused on people who live in neighborhoods known as 'food deserts,' hypothesizing that people who live closer to food retailers have better access to purchase food and thus less likely to be food insecure. (Waity, 2016; Short, Guthman, & Raskin, 2007). This research focuses on supply-side solutions that require purchasing power to food deserts, such as supermarkets in poor areas, grassroots movements such as farmer markets, and healthy corner store initiatives (Short, Guthman, & Raskin, 2007). However, studies of food deserts do not account for the presence of food assistance agencies, that do not require purchasing power, such as food pantries. Families living close to a grocery store can be classified as not living in a food desert, yet these same families may lack the resources to afford food at the local

grocery store (Waity, 2016). As a result, not accounting for food pantries in food deserts can leave out an important resource for some individuals' ability to access food.

In terms of research related to food pantries themselves, studies have examined the descriptive characteristics of food pantry clients as well as the dietary intake of food pantry clients (Fong, Wright, & Wimer, 2016; Greer, Cross-Denny, McCabe, & Castrogivanni, 2016; Shanks, 2017; Simmet, Depa, Tinnenmann, & Stroebele-Benschop, 2017). For example, a study identified that food pantry clients did not receive the recommended 5-7 servings of fruits and vegetables a day, and inadequate intake of dairy products and grains as defined by national dietary recommendations (Simmet, 2017). In addition, most studies around food pantries have been conducted in states other than Texas, such as Iowa and Missouri (Chapman, 2017; Garasky, Morton, & Greder, 2004). Food pantries can serve as an important alternative source of decreasing food insecurity, but there is a gap in research about the food pantry quality within Texas, specifically in Travis County.

Spatial inequality can reveal "who gets what and where," by moving beyond the traditional concept of inequality of "who gets what and why" (Wait, 2016). Therefore, spatial inequality can help inform researchers and policymakers beyond inequalities commonly studied such as gender or age. Spatial inequality is a generally unobserved concept in terms of access to food pantries. Currently, only Waity, who in 2016 developed the term "food assistance deserts", has reviewed the spatial inequalities of urban and rural food assistance agencies. By applying this concept to Travis County, this project will provide the spatial proximity of food pantries and assess their food quality in Travis County based on data collected from food pantry administrators and volunteers.

PUBLIC HEALTH & PUBLIC POLICY SIGNIFICANCE

This study will significantly contribute to public health and public policy identifying neighborhoods at risk of food insecurity that have limited access to food pantries. The identification of these neighborhoods is of great public health relevance since efforts to increase access to healthy foods should be focused in these communities. For low-income families, rent, transportation, healthcare, and childcare take priority, making food the most flexible budget item every month (Bread for the World Institute, 2018). Even families with incomes that qualify them for SNAP tend to need continued supplemental support from food pantries (Duffy, 2007). In addition, some families who earn too much to be eligible for SNAP are still in need of food assistance. These families also make regular visits to food pantries to cope with food insecurity (Feeding America, 2011). Therefore, the use of both public and private assistance is critical to addressing food insecurity.

In addition, cities have been known to be catalysts for social and economic change (Atkinson & Freudenberg, 2015). Travis County encompasses the City of Austin, a fast-growing city with a local government with a mission for sustainable and equitable food system for all (City of Austin Office of Sustainability, 2015). However, Austin, like other cities across the U.S., is experiencing exponential growth along with rising housing costs, forcing a relocation of low-income communities farther from the city center. As a result, current food pantry locations may be spatially mismatched, where areas with lower poverty rates have more access to food pantries than those in higher poverty areas (Waity, 2016). The current study will provide an analysis to reveal the connection between food insecurity, food pantry access and food quality to identify vulnerable areas in which food pantries are or are not serving high-nutrient food for clients. By doing so, food access to healthy foods for communities lacking economic means to afford enough food will be less likely to be food insecure.

Study Research Question, Objectives, & Hypothesis

Research Question 1: Is the distance to food pantries in high vulnerable areas less than the distance to food pantries in less vulnerable areas in Travis County, Texas?

Objective 1: Examine the association between distance (in kilometers) to the nearest food pantry and poverty level, at the census block group level in Travis County, Texas.

Hypothesis 1: Individuals living in census block groups at poverty levels below 200 percent will be closer in distance to food pantries than individuals living in census block groups with poverty levels greater than 200 percent.

Research Question 2: Do food pantries located in vulnerable areas have higher scores on the Quality and Accessibility Index, compared to food pantries located in less vulnerable areas, defined as majority of the population in a census block group living above 200 percent FPL?

Objective 2: To develop a food pantry Quality and Accessibility index integrating key constructs: 1) presence of fresh or frozen fruits and vegetables; 2) presence of meats, dairy, and eggs; 3) food pantry infrastructure; and 4) food pantry transit availability/accessibility). This Quality and Accessibility Index was then used to rank and geocode a sample of 60 food pantries in Travis County by overall quality scores.

Methods

Study Design

This study used cross-sectional design to analyzes data about food pantry location and quality in Travis County, Texas. The City of Austin provided secondary data for this study. In spring 2017, the City of Austin compiled a list of all known operating food pantries in Travis County, Texas (n=117), and conducted objective audits with food pantry staff/volunteers to capture vital characteristics of the food pantry system in Austin/Travis using a survey developed in house (n=33). The assessment aimed to understand operation capacity, daily activities, structural factors, challenges, and typical food stock on a typical day of all food pantries in the county. In addition, primary data were collected from food pantry staff/volunteers in Spring 2018 to provide survey data on 27 more food pantries. Primary data were collected using the same Food Pantry survey developed by the City of Austin (Appendix A). The survey questions were used to construct the food pantry Quality and Accessibility index by using specific questions to identify the constructs to be measured for the index.

Sample Selection

In Spring 2017, the City of Austin had 140 food pantries listed as operating in Travis County, Texas. However, after vetting the initial list, some food pantries were duplicates, or their existence could not be confirmed. Only 117 food pantries were confirmed. Of the 117 confirmed unique pantry sites, the City of Austin provided complete survey responses from 33 food pantries (response rate = 28%). In February 2018, 27 additional food pantry staff/volunteers completed the survey. Of the 27 new food pantries, 11 were mobile food pantries. Mobile food pantries, operated through the Central Texas food bank, were not included in the initial survey sample collected by the City of Austin

due to the lack of a way to classify them. However, after verifying that the mobile food pantry had a fixed location they served, it was determined they needed to be represented in the food pantry sample. As a result, mobile food pantry data was collected from 11 of the 16 Central Texas Food Bank operated mobile food pantries. This study included a final sample of food pantry surveys for 60 operating food pantries serving in Travis County, Texas for the analysis.

RECRUITMENT OF ADDITIONAL FOOD PANTRIES

Secondary data from food pantries were provided by the City of Austin. Primary data for additional food pantries was collected using a master list of food pantries complied by the City of Austin of currently operating food pantries with food pantry contact information. If the contact was not currently volunteering or working at the food pantry, the organization was emailed for a new point of contact. In Spring 2018, 27 participants completed an online survey through the survey platform, Qualtrics. The survey was made available online and contained an informed adult consent and took the participant an estimated 15-20 minutes to complete.

MEASURES

Variables for Analysis

The dependent variable was poverty level which was made into a dichotomous variable. For census block groups with more than 50 percent of the population living below 200 percent FPL, those census block groups were coded 1. This group was identified as a "more vulnerable" census block group. For census block groups with less than 50 percent of the population living below 200 percent FPL, those census block groups were coded 0. This group was identified as a "less vulnerable" census block group. The independent

variable for analysis was distance (in kilometers) of the census block group to the nearest food pantry (n=117). Distance was a continuous variable that was measured from the centroid, or center of the census block group, to the nearest food pantry.

Food Pantry Quality & Accessibility Index

To assess food pantries on their food Quality and Accessibility index (QAI), an index was created using questions from the food pantry survey. The purpose of the index was to provide an assessment of Quality and Accessibility to the food pantry that was supported by literature. The food pantry Quality and Accessibility index consisted of 4 construct indicators which include: 1) presence of fruits and vegetables, 2) presence of meats, dairy, eggs, 3) food pantry infrastructure; and 4) food pantry transit accessibility. The construct indicators are based on the food pantry survey questions constructed by the City of Austin and are supported by evidence found in the literature as important indicators to observe in food pantries (Simmet, et. al, 2017; Shanks, 2017; Bush-Kaufman, Walsh, & Barale, 2017). The total index score ranged from 0-28 with 28 being a food pantry that serves high-quality food and is easily accessible. The index used 11 questions from the food pantry survey whose responses are summed to create the QAI score. The number of responses for each question varied from 3 to 4 responses. The scales for answers per question vary due to the different number of possible answers for each question used within a construct such as 0-2 or 0-3.

The Food Pantry Quality and Accessibility Index (Appendix B) was developed using the following indicators:

Food Availability

Question	Scoring
Q: 30, 31, 34, 35	Overall Score 0-12
30. Fresh Fruits?	0-3: 0=never 1= rarely 2=sometimes 3= always
31. Fresh vegetables?	0-3: 0=never 1= rarely 2=sometimes 3= always
34. Frozen Fruits?	0-3: 0=never 1= rarely 2=sometimes 3= always
35. Frozen Vegetables?	0-3: 0=never 1= rarely 2=sometimes 3= always

Table 1. Presence of fresh and frozen fruits and vegetables (based on daily food supply)

The presence of fruits and vegetables is a good indicator of healthy options at the food pantry. As a result, Questions 30, 31, 34, and 35 (Appendix A) were used to assess the presence of fresh and frozen fruit and vegetable options at the food pantry. The questions contain 4 possible answers: always, sometimes, rarely, and never. The answers were weighted 0-3 on a scale of possible answers: 0=never; 1= rarely; 2=sometimes; 3= always. After scoring the 4 questions, the overall score was weighted with a possible score ranging between 0-12, where 0 indicates “fresh or frozen fruits and vegetables never

present" and 12 indicates "fresh or frozen fruits and vegetables always present." This indicator identified the presence of fresh or frozen fruits and vegetables, excluding canned fruits and vegetables because canned fruits can often be a source of added sugars and canned vegetables can be a source of high sodium (Bush-Kaufman et.al, 2017). In terms of frozen fruits and vegetables, they can provide pantries with more fresh produce at a lower cost and are often more nutrient dense than canned or dried foods (Bush-Kaufman et.al, 2017).

Question	Score
Q: 39, 40, 44, 59	Overall Score: 0-12
39. Lean Beef (>85%)?	0-3: 0=never 1= rarely 2=sometimes 3= always
40. Chicken breast (skinless or boneless, fresh or frozen, may include unflavored chicken breast strips, but not breaded chicken)	0-3: 0=never 1= rarely 2=sometimes 3= always
44. Eggs (boiled, raw, liquid)	0-3: 0=never 1= rarely 2=sometimes 3= always
59. Low-fat milk (1% or skim)	0-3: 0=never 1= rarely 2=sometimes 3= always

Table 2. Presence of meats, eggs, and dairy (based on daily food supply)

The presence of meat, eggs, or dairy options can serve as a proxy for the measuring the quality of a food pantry since it is more difficult for food pantries to provide these foods (Bush-Kaufman et.al, 2017). Questions: 39, 40, 44, and 59 (Appendix A) were used to assess the presence of meat, eggs, and dairy as an indicator of food availability at the food pantry. Each question has 4 possible responses: always, sometimes, rarely, and never, and were weighted on a scale of 0-3: 0=never; 1= rarely; 2=sometimes; 3= always. After each of the 4 questions, the scores were summed for an overall score ranging between 0-12, where 0 represents "meat, eggs, dairy never present" and 12 represents "meat, eggs, dairy always present". For food pantries, Meats, eggs, and dairy can be challenging to obtain and food pantries may have limited storing options, but are important sources of proteins, vitamin D, and calcium (Bush-Kaufman et.al, 2017).

Question	**Score**
Q19: A, B	Overall Score: 0-2
Refrigerator storage?	0-1: 0=no 1=yes
Frozen Storage	0-1: 0=no 1=yes

Table 3. Food Pantry Infrastructure

The quality of food pantry infrastructure determined by the availability of certain storage capabilities of certain foods at a pantry. Infrastructure such as food storage facilities is a provision of physical access for food and reveals the ability of a food pantry to provide access to a wider variety of food beyond non-perishable items (FAO, 2013). This indicator uses Question 19: A & B (Appendix A) of the food pantry survey in which the food pantries

reported the presence of certain infrastructure through yes or no questions: 0=no and 1=yes. The infrastructure questions include the presence of A) refrigerator and B) frozen storage. Each yes or no response is weighted as yes=1 and no=0 for a total score range of 2 if both are present and a score of 0 if none are present. Freezers and refrigerators can increase a food pantry's capacity to provide more perishable foods, such as fruits, vegetables, meat or eggs (Bush-Kaufman et.al, 2017).

Food Access

Question	**Score**
Q: 11	Overall Score: 0-2
11. Bus Stop Nearby?	0-2: 0=No 1= Yes, within 2-5 blocks 2=Yes, within 1 block

Table 4. Food Pantry Transit Accessibility

This indicator was based on the physical presence of a bus stop in proximity to a food pantry. Supporting transit options for clients without vehicles can help ensure that food pantry clients without cars or limited mobility have other options to get to and from food pantries (Bush-Kaufman et.al, 2017). Using question 11 (Appendix A) of the food pantry survey, food pantries reported their perceived proximity to the nearest bus stop. In addition to the recorded survey question, proximity to a bus stop was cross referenced by a GIS analysis of the distance of the nearest bus stop to a food pantry. If there was conflicting data between the perceived distance and the actual distance, the distance calculated in GIS was used as the distance used for analysis. The average block in the City of Austin measures 345 ft., so food pantries were given a score based on block cut offs of

0-345 ft.=Yes, within 1 block (score of 2), 345.01-1,725 ft.= Yes, within 2-5 blocks (score of 1), and greater than 1,725.01ft=No (score of 0) (Price, 2013). The scores were summed by the GIS analysis for a score range between 0-2, where 0 represents "no bus stop nearby" and 2 represents "bus stop nearby." Differences in perceived proximity to a bus stop compared the actual distance are reported in the Results section.

ANALYSES

The following statistical analysis was determined by calculating the distance between the census block groups in Travis County, Texas to the nearest food pantry in ArcGIS 10.5. Each of the nearest census block groups contained poverty data on the community being served by the food pantry. STATA 15 statistical software was used to calculate frequencies for descriptive statistics, t-test, and conduct a univariate logistic regression.

T-Test Analysis

T-test analyses were conducted by comparing the mean distance (in kilometers) for the two poverty groups: 1) >50% of residents living at 200 percent FPL; 2) <50% of residents living at 200 percent FPL. First a test of equal variance was conducted using a standard deviation test of the two poverty groups. Next, a t-test for unequal variance was conducted to find the difference in mean distances of census block groups divided into two different levels of poverty groups to the nearest food pantry.

Univariate Logistic Regression of Surveyed Food Pantries in Travis County, Texas

A univariate logistic regression was used to determine if there is a significant association between the distance (in kilometers) to the nearest food pantry and poverty

level, at the census block group level for Travis County, Texas. The model analyzed significant differences using the poverty level variable of 200 percent FPL and distance (in kilometers).

Descriptive Statistics of Surveyed Food Pantries in Travis County, Texas

Descriptive statistics were generated for the food pantry survey results to provide an overview of the quality and accessibility of the food pantries sampled based on the four observed indicators: 1) presence of fresh or frozen fruits and vegetables; 2) presence of meats, dairy, and eggs; 3) food pantry infrastructure; and 4) food pantry transit accessibility. In addition, food pantry characteristics as it relates to operations, sources of donations, and most requested food items were reported.

For the overall food pantry index score, based on a scale of 0-26, the scores were split into tertiles to determine low, medium, and high quality food pantries. A high-quality food pantry is one that has the capacity to serve nutrient-dense food such as fruit, vegetables, meats and dairy as well as has capacity to store these food, and is easily accessible for clients. Medium quality food pantry will have some availability of nutrient dense foods, some capacity of storage, and may be accessible. Low-quality food pantries are those that lack the capacity to serve nutrient-dense foods, lack storage capacity, and are not as accessible for clients. In addition, the food pantry index scores were used to rank the food pantry index scores from highest to lowest. Lastly, summary statistics were analyzed for the overall food pantry index to show the mean, median and standard deviations.

DATA VISUALIZATION

Geographic & Demographic Characteristics of the Study Sample

Neighborhood-level (census block groups) sociodemographic information 2016 American Community Survey 5-year estimates was used to analyze the distribution of food pantries in Travis County by poverty rate, median household income, and race/ethnicity.

Development of Maps

Currently operating food pantries were geocoded by Texas A&M's Eservices program to provide the location of food pantries in ArcGIS, version 10.5 (Geographic Information Systems). Geocoded food pantries were spatially joined with the census block groups boundary layer to assign neighborhood-level sociodemographic indicators to each pantry by location (Figure 3-4). A graduated symbol map was created to visualize the differences in food pantry quality (Figure 5). In addition, another map was created to show where high, medium, and low quality food pantries are located (Figure 6). To visualize where these pantries are located, choropleth (color graded) descriptive maps were created to display sociodemographic indicators including Race/ethnicity, Median Household income, and Poverty Level (Figure 7-9). Lastly, census block groups that met three criteria were identified: median household income lower than 50,200, more than 50 percent African American and/or Latino, and greater than 50 percent living below 200 percent FPL based on demographic data to develop a map to show census block groups at risk for food insecurity (Figure 2).

HUMAN SUBJECTS, ANIMAL SUBJECTS, OR SAFETY CONSIDERATIONS

Previously collected data were by the City of Austin and the U.S. Census Bureau, were used for part of this study. In addition, survey data were collected using the same survey the City of Austin used in Spring 2017. To collect additional food pantry data, Institutional Review Board approval from the University of Texas Health Science Center was obtained before the commencement of this study (HSC-SPH-17-1080). Data were collected from adult volunteers and staff that run and operate the food pantries. Survey data used for this study was de-identified (made anonymous) by assigning a unique ID number to each participating food pantry. Other data on demographic indicators, i.e. poverty rates and median household income, were obtained from publicly available data from the American Community Survey 2016, 5-year estimates.

Results

The food pantries surveyed are currently distributed throughout the city serving on average at least 25-50 people in a normal operating day. Given the volunteer nature of the food pantries, some are open multiple days, while others are only open one day a week. Most food pantries reported the Central Texas Food Bank as their main provider of food and the top three most requested foods were fruit, vegetables, and meats/eggs. When asked about improvements needed for the food pantries, most reported more donations, variety of food, and more funding as the pantry's greatest needs.

Overall, most food pantries are located closer to the city center along I-35. Most mobile food pantries are found to be located east of I-35, while brick and mortar food pantries are located west of I-35. Based on the analysis, the distance (in kilometers) to the nearest census block groups with more vulnerable residents were found to be living closer to food pantries than census block groups with less vulnerable residents.

DISTANCE TO THE NEAREST FOOD PANTRY AND POVERTY LEVEL (N=117)

The univariate logistic regression revealed there is a significant difference between the distance (in kilometers) of food pantry and poverty level of 200 percent FPL at the census block group level. A 1 kilometer increase in distance to the nearest pantry is associated with 0.86 lower odds of poverty at the census block level. Census block groups that have more than 50 percent of residents living below the 200 percent FPL live, on average live a distance 4.82 km from the nearest food pantry. For census block groups with less than 50% of residents living below 200 percent FPL, they live, on average, 3.55 kilometers away from the nearest food pantry.

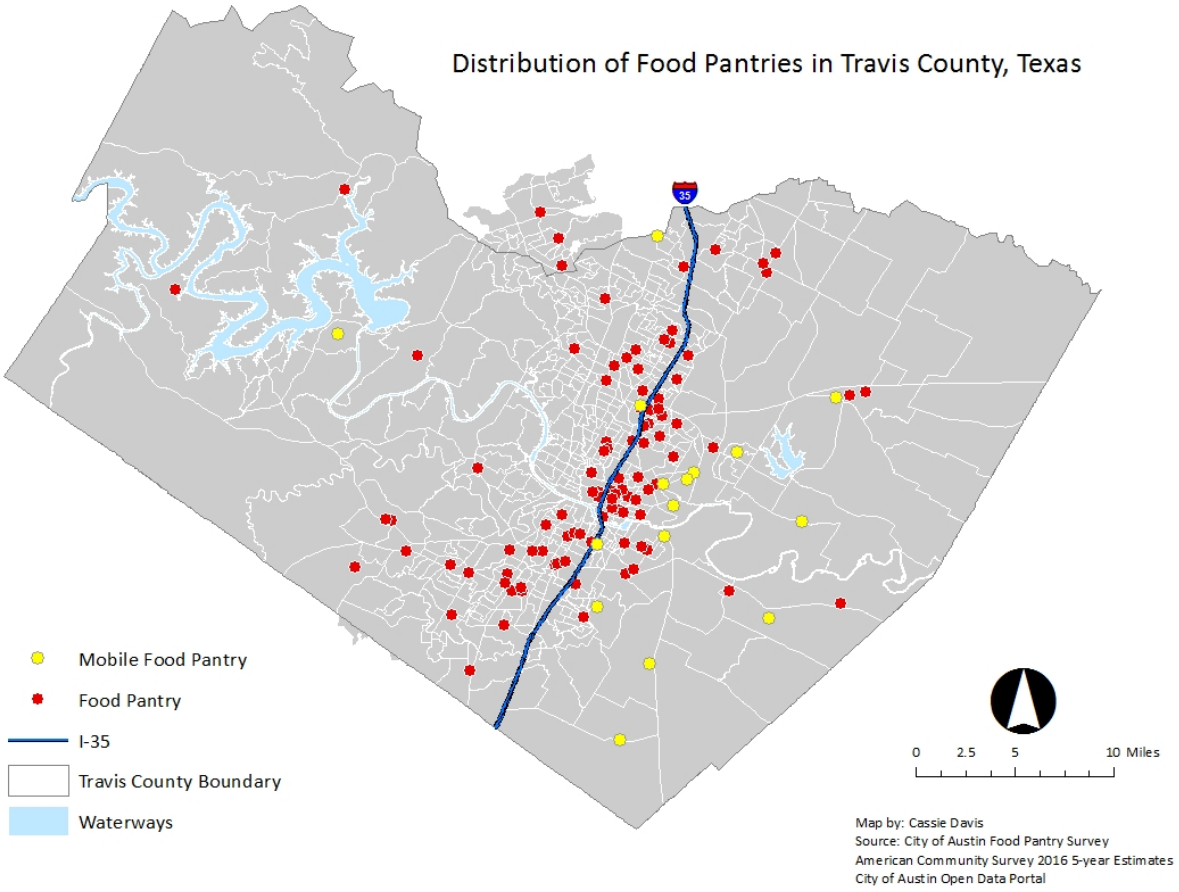

Figure 3: Distribution of Food Pantries in Travis, County 2018, by Census Block Group.

Distance to Nearest Food Pantry in Kilometers (n=580)				
Poverty Level	Observations	Mean	SD	95% CI
>50% living below 200 percent FPL	131	4.82	4.15	[4.10;5.53]
<50% living below 200 percent FPL	449	8.37	6.98	[7.73;9.02]

Table 5. Distance (in Kilometers) to nearest food pantry and poverty level, by census block group.

Logistic Regression of Distance to Nearest Food Pantry and Poverty Level, by Census Block Group (n=580)				
Poverty Level	Odds Ratio	Standard Error	p-value	95% CI
200 percent FPL	0.86	0.02	0.00*	[0.81; 0.90]

Table 6. Association between Distance to nearest food pantry and poverty level, by census block group.

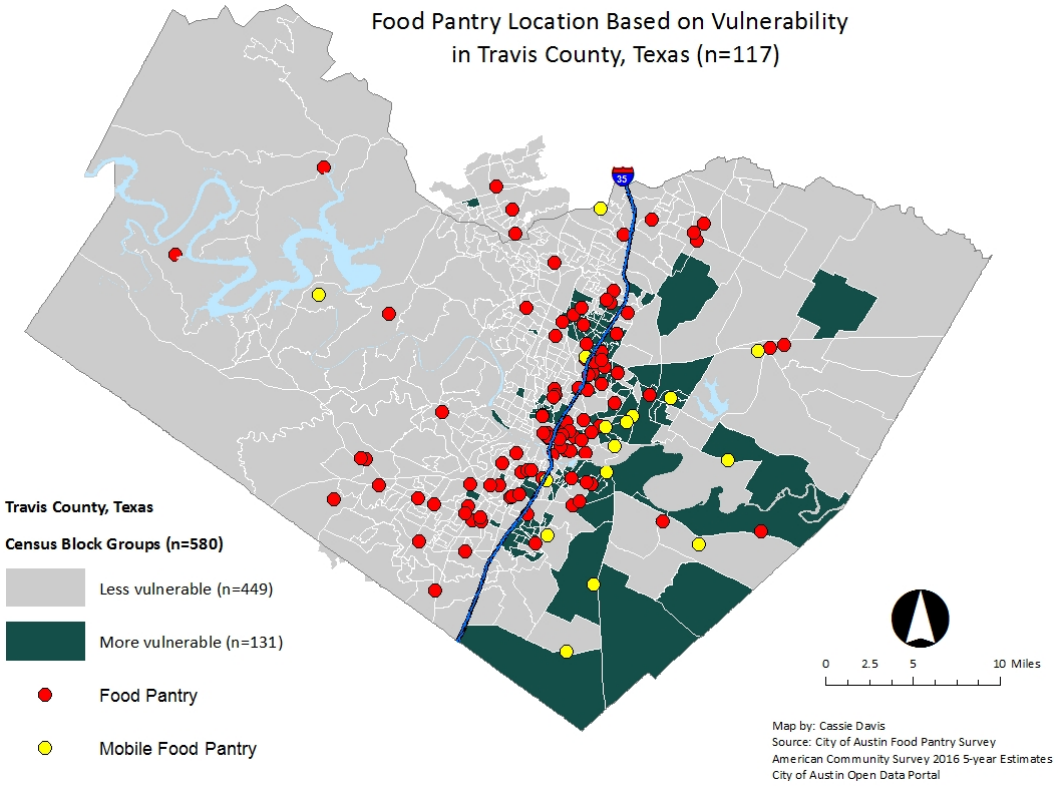

Figure 4: Food Pantry Location Based on Vulnerability in Travis, County 2018, by Census Block Group.

FOOD PANTRY QUALITY AND ACCESSIBILITY INDEX

Food pantry quality assessed by the sample of food pantries was found to have an average food pantry Quality and Accessibility index score of 16.93 and a range of scores from 0-26. The diversity of the food pantry sample reveals the variation in quality of food pantries currently operating in Travis County, Texas.

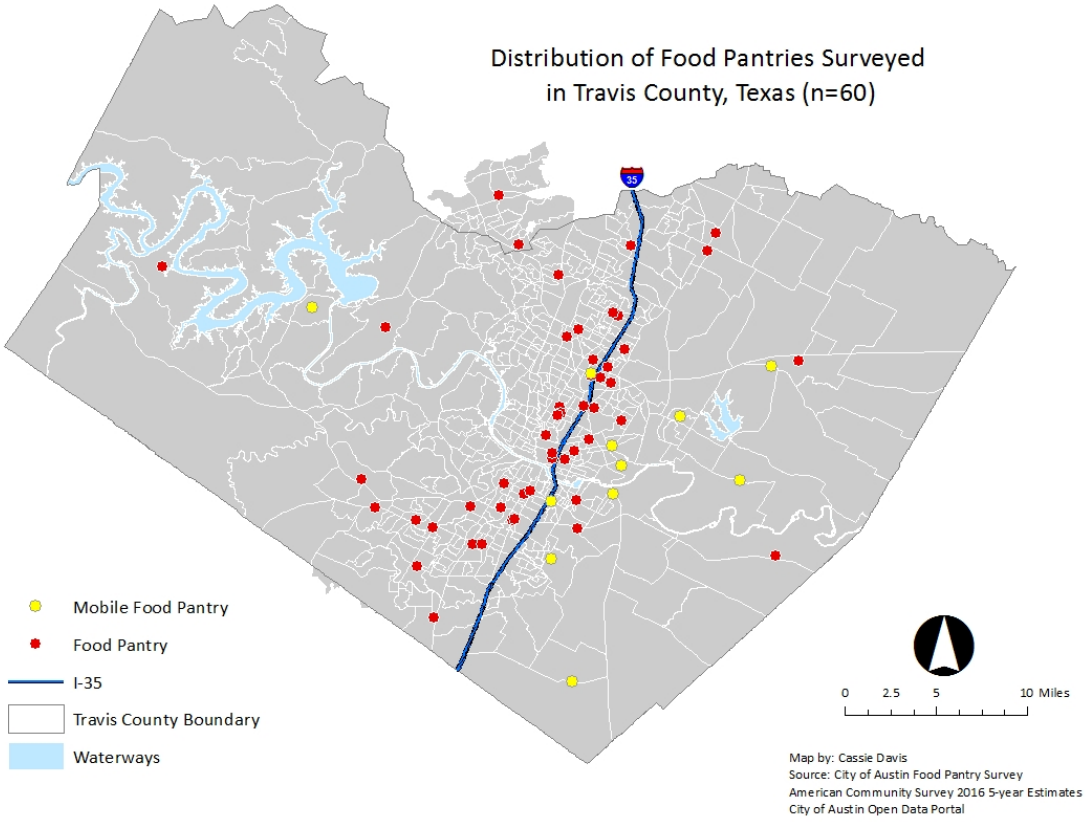

Figure 5. Map of the Surveyed Food Pantries by Census Block Group.

The final sample consisted of n=60 food pantries. The food pantries participating in the index had a mean overall score of 16.93 on a scale of 0-28, with 28 pantries representing a high-quality food pantry. The mean, median and standard deviation (SD) for the indicators used to build the food pantry index score are displayed in Table 3. For presence of fruits and vegetables, there was a mean score of 6.76 on a scale of 0-12, where 0 indicates "fresh or frozen fruits and vegetables never present" and 12 indicates "fresh or frozen fruits and vegetables always present". Given that the average score was 6.76, there is not always fresh or frozen fruits and vegetables on an average operating day. Presence of meat, eggs, dairy had a mean score of 7.18, which indicates not all food pantries have

meat, eggs or dairy on an average operating day. Of the sample of food pantries, 40 food pantries scored below 8 for presence of fresh or frozen fruits and vegetables and for presence of meat, dairy, and eggs. The mean score for a food pantry's infrastructure was 1.76, and more than 85 percent of food pantries had both a refrigerator and freezer. On average, food pantries were located within 2-5 blocks of the nearest bus stop. Of the respondents surveyed, 60 percent were correct in their perceived distance to a bus stop, while 40 percent did not perceive the actual distance. In most cases, respondents whose perceived distance did not match the actual distance tended to perceive the bus stop to be further away than it was (68 percent of respondents).

In Table 4, the overall scores from the food pantry index were split into tertiles to divide the sampled food pantries into high, medium, and low quality food pantries. Figure 5 displays the location of the food pantries based on their food pantry index score shown by a graduated symbol in GIS. Figure 6 displays the location of the food pantries by their high, medium, or low food pantry index score denoted by different symbols. Table 6 provides the rank order of the food pantries organized by their food pantry score. The ranking range is from 0-18 and not 0-60 since there were similar scores for multiple food pantries.

Visual representation of the sociodemographic variables with the location of high, medium, and low quality pantries can provide insight in where high-quality food pantries are located (Figures 7-9). Overall, there were 13 high quality food pantries. Of those that were high-quality, 11 of them were located west of I-35 while only 2 were located east of I-35.

Food Pantry Index Score (0-26)			
Indicator	Mean	Median	SD
Food Pantry Transit Accessibility (Score 0-2)	1.21	1.00	0.738
Food Pantry Infrastructure (Score 0-2)	1.76	2.00	0.647
Presence of Fruit & Vegetables (Score 0-12)	6.76	7.00	2.33
Presence of Meat & Dairy (Score 0-12)	7.18	8.00	2.53
Food Pantry Index Score (Score 0-28)	16.93	17.50	4.61

Table 7. Descriptive Statistics of Food Accessibility & Quality in Travis County, Texas.

Food Pantry Index (n=60)		
Food Pantry Index (Score 0-26)		
Low Quality (Score 0-16)	24	40.00%
Medium Quality (Score 17-19)	23	38.33%
High Quality (Score 20-26)	13	21.67%

Table 8. Food Pantry Index Score Tertile.

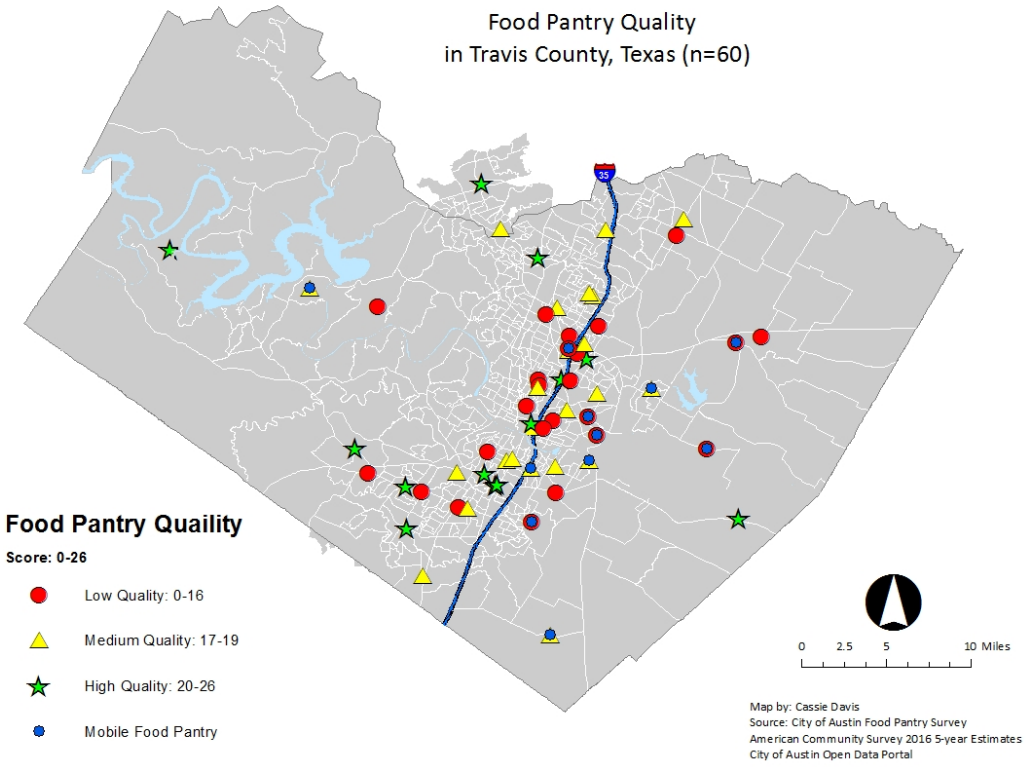

Figure 6. Map of High, Medium, and Low Quality Food Pantries, by Census Block Group.

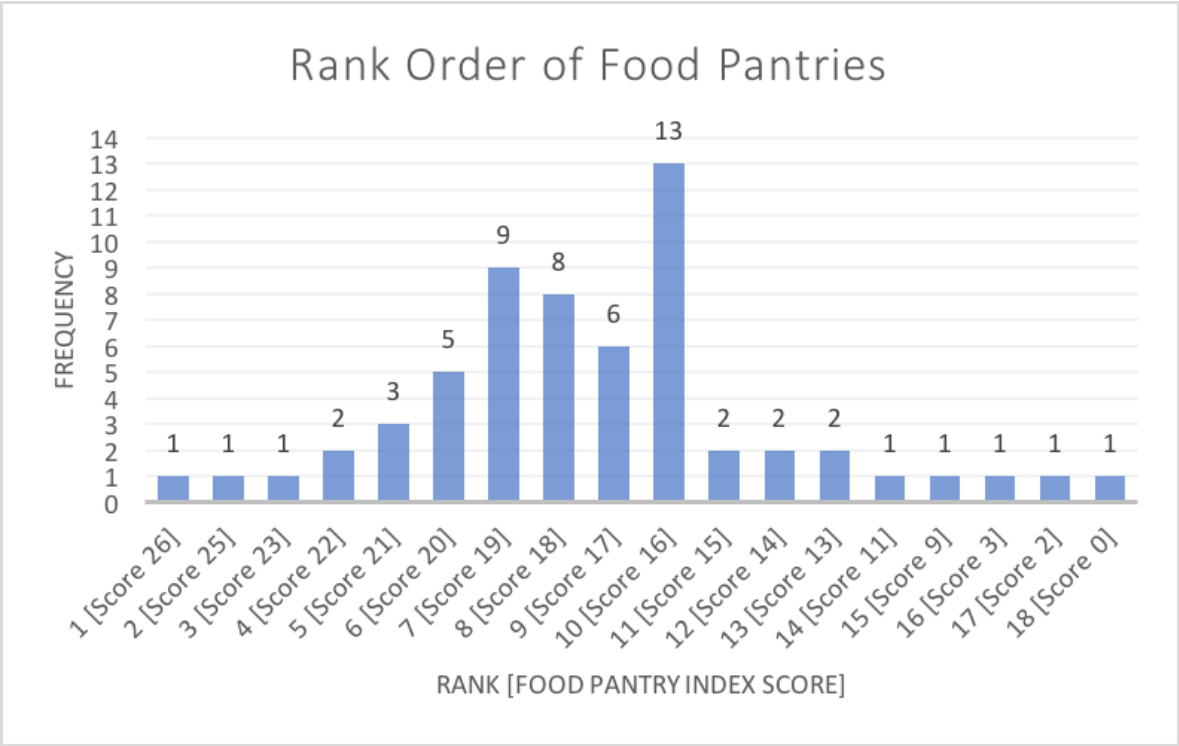

Table 9. Rank Order of Food Pantry Sample by Food Pantry Index in Travis County.

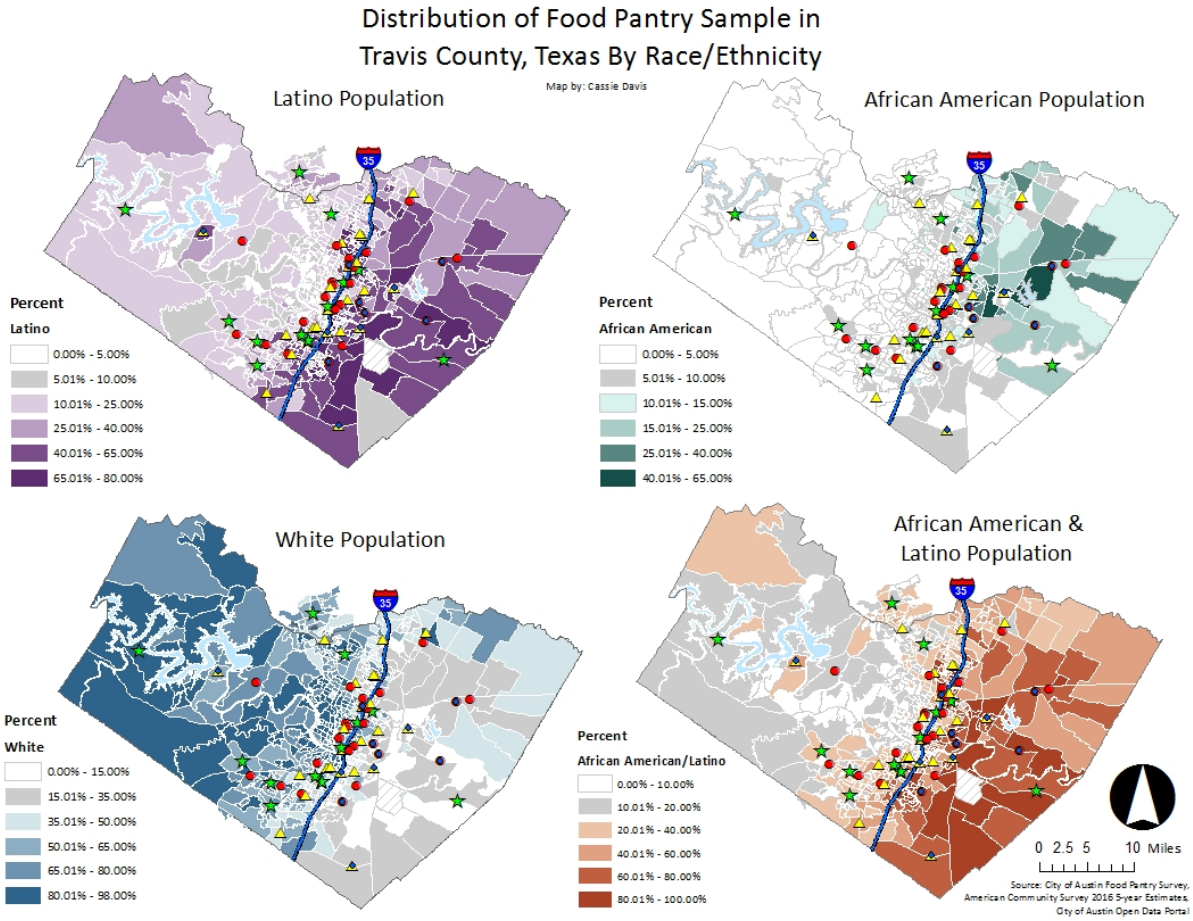

Figure 7. Food Pantry Access in Travis County, Texas by Race/Ethnicity at the Census Block Group.

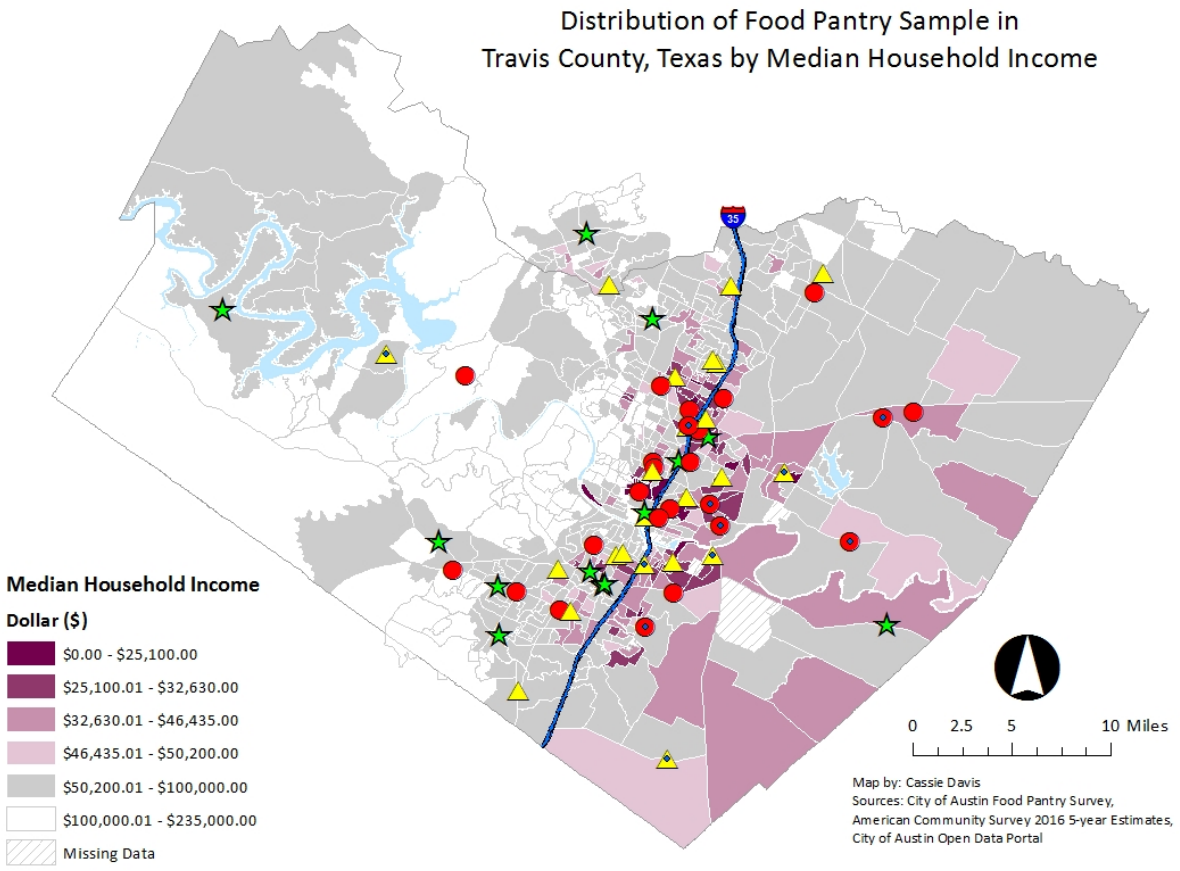

Figure 8. Food Pantry Access in Travis County, Texas by Median Household Income at the Census Block Group.

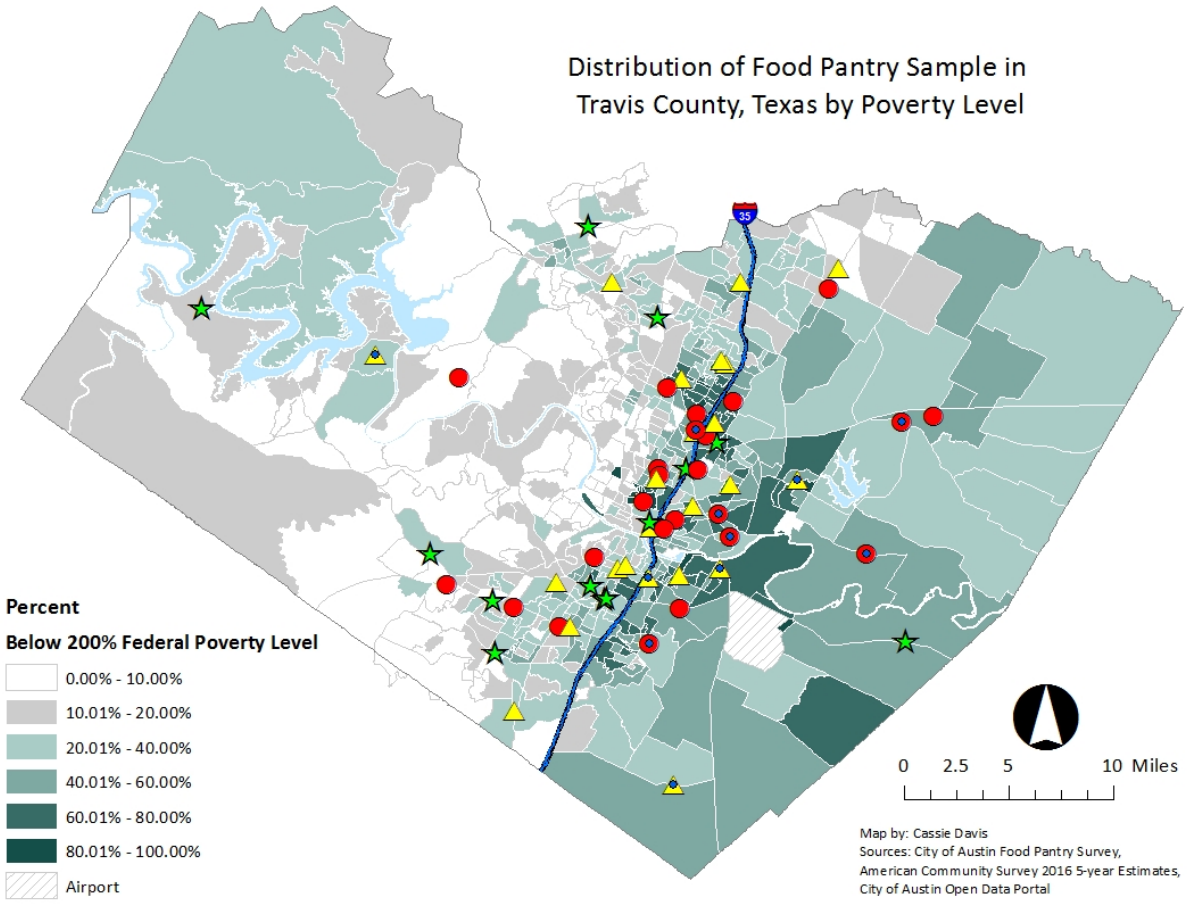

Figure 9. Food Pantry Access in Travis County, Texas by Poverty Level at the Census Block Group.

Discussion

IMPLICATIONS

This project aimed to determine if food pantries are correctly located in areas of need in Travis County, Texas and if the quality of food pantry varies by the location of the pantries. Results indicate that currently operating food pantries are located closer to census block groups with more than 50 percent of individuals living below 200 percent FPL who tend to be the most vulnerable to food insecurity. Current research is limited on looking at the spatial inequality of food pantries. Waity (2016), who conducted the only known current research on this topic, found a similar result, which identified that urban areas with high poverty are least likely to be food assistance deserts. This is referred to as the responsive community hypothesis, in which more vulnerable areas in the urban setting have fewer food assistance deserts because higher poverty leads to more need and more food pantries to meet that need (Waity, 2016). However, there are less census block groups (n=131) that are categorized as most vulnerable than census block groups that are less vulnerable (n=449). Most census block groups contain fewer than 50 percent of residents living below 200 percent FPL. Although the findings indicate that food pantries are located closer to those in needs, there are still individuals living in poverty in census block groups who are, on average, 3.55 kilometers away from food pantries. As a result, residents in poverty in census block groups considered not poor may be lacking accessibility to food pantries.

The food pantry Quality and Accessibility index provided a basis to assess food pantry quality in Travis County, Texas. The results reveal that location of high quality food

pantries tend to be west of I-35 when compared to lower to medium quality food pantries east of I-35. This distinction is important because I-35 has historically segregated Austin by race and income through zoning codes and land use. The results of this segregation have led to inequality in access to services, including food access. As this study reveals, there is also disparities in access to food pantries. Given the current displacement patterns in Austin, Texas it will be important to consider proactive approaches to food pantry location to meet the need where they are going, which is further from the city center.

The methodology for this study could be strengthen in several ways. One way to improve the study would be to assess additional sociodemographic variables when looking at the effects of distance to the nearest food pantry to uncover potential differences in access based on other indicators such as race/ethnicity or education level. Another way to improve the study is to provide more robust measures of quality. This could be achieved by developing surveying materials with the intention of developing an index to make sure the correct questions are provided to create better measures of quality. In addition, the fruit and vegetable indicator could have been executed better by scoring food pantries based only on fresh fruits and vegetables rather than scoring food pantries on fresh and frozen fruits and vegetables. This would provide a fairer score for food pantries that provide fresh produce, but may lack frozen fruit and vegetable options since providing fruits and vegetables overall is important. In addition, future studies would benefit from further analysis of food pantry clients in Travis, County, Texas to show the experience of those using the services.

POLICY RECOMMENDATIONS

As this study finds, the location of food pantries as they are currently operating are trying to meet the needs of those vulnerable to food insecurity, but displacement and

rapidly changing demographics are factors to consider moving forward. One solution could be private-public partnerships in which local non-profit funders could provide support to the Central Texas Food Bank to expand the current mobile food pantries. Based on current locations of food pantries mainly along I-35 and more located west of the interstate, refrigerated mobile food pantries have been placed in areas that lack a brick and mortar food pantry. Partnerships with schools or affordable housing organizations could be ideal locations to expand the program to. However, some considerations to note would be that often-mobile food pantries require more staff/volunteers and distribution times are limited. (Snelliing, Jacknowitz, Maroto, Kalamchi, and Breannegan, 2012). As a result, this initiative would need more support from the city and non-profit partners.

Private food assistance was not meant to support chronic food insecurity. Therefore, government assistance programs like SNAP or WIC play a critical role in achieving food security. Programs like SNAP provide purchasing power for food to low-income households. They also provide other initiatives like SNAP-Ed, a nutrition education program available for those receiving SNAP and/or those living below 185 percent FPL. SNAP-Ed can improve long-term household food security (Rivera, Eicher-Miller, Maulding, Abbott, and Wang, 2016). It should be noted that SNAP participation in Travis County has dropped over 5 years (2012-2017) by 7.1 percent making it likely that these vulnerable populations could be without SNAP benefits (Evans, Jennings, & Nikah, 2017). Both public health and policy advocates would benefit from developing more awareness around eligibility for government assistance programs at food pantries to increase enrollment rates.

For those not eligible for government nutrition assistance programs, food pantries will remain a key food source for low-income households. As found in this study, food pantries may be located closer to areas of need, but the quality of food pantries vary.

Currently the City of Austin has funding to support food accessibility, specifically food pantries. A possible way to use that money to support food pantries would be by providing mini-grants to food pantries to expand capacity or operating hours could provide more accessibility to clients. The City of Austin would benefit from providing support to strengthen the quality of the currently operating food pantries. Most food pantries have low availability of meat, eggs, and dairy and fresh or frozen fruits and vegetables, yet have storage for more non-perishable items. To ensure that healthier options are being made available to food pantry clients, the City of Austin would benefit from developing incentives and partnerships with local farmers, grocers, or restaurants to increase the availability of more nutrient-dense food provided at food pantries.

Finally, many food pantry clients are used to non-perishable foods, which can be simpler to prepare. As a result, food pantries could benefit from partnerships with local non-profits that conduct food demonstrations of the available fresh food or could provide recipe books for common items found at the food pantry. In addition to food preparation knowledge, it would be beneficial to provide the equipment directly to food pantries to prepare the food. Donated kitchenware from non-profit partners or private donations could be helpful in increasing low-income households' ability to prepare the food they receive from a food pantry (Shanks, 2017). These solutions would empower food pantry clients to make healthier choices and increasing knowledge of food preparation.

STRENGTHS & LIMITATIONS

This study contributes to the limited literature on the relation between the distance of a food pantry to need and food availability and quality of food pantries. Other strengths of this study include the location of the study as no other current studies have been

conducted on the food pantry quality and accessibility in the Austin area. Texas, especially central Texas, is a unique location to assess food pantries due to the demographic changes that have taken place in the last five years where low-income populations are moving further from the city center. As a result, this study provides proactive solutions and locations that are vulnerable to food insecurity and would benefit from access to food pantries. This study of the food pantry as the unit of analysis, while other studies focused on client-level analysis. Lastly, this study provides a basis for identifying high-quality food pantries and visual representation of where they are located, which uncovered disparities in high-quality food pantry location.

Limitations include the cross-sectional design, which impedes causal association between exposure and outcomes. Due to the nature of volunteer-based food pantries, there are limitations in collecting data from all 117 food pantries such as volunteer turnover and limited bandwidth to complete the survey. The survey also contained limited questions to build the food pantry Quality and Accessibility index. The current index could be more robust. When compared to a recent Healthy Food Pantry assessment, a toolkit developed by the USDA to help pantries and their SNAP-Ed partners identify action areas for interventions, the survey used to collect data on food pantries for this study only accounted for a small proportion of questions/topics to assess food pantry quality (Bush-Kaufman, 2017). To really capture the food pantry quality, further assessments of the quality of food pantries in Travis County would be helpful. Lastly, the sample used for analysis was a convenience sample and not randomly selected so there may be sampling bias and the data presented is not representative of the entire population.

Conclusion

The study found that there are differences in access to food pantries based on poverty level. Even though food pantries may be located closer to areas of need, there are still residents that do live further from a food pantry. To address these differences in location a potential next step would be to develop a strategic plan for locations of new, high-quality food pantries. In addition, the study points to a need for a more robust assessment of the quality of food pantries to build on the findings from the QAI to determine more information on what makes a higher quality food pantry. This study provides an analysis to assess the food pantries operating in Texas, specifically Travis County. I would suggest further analysis of those food pantries performing well to develop food pantry best practices to strengthen other existing food pantries to create better health outcomes and decrease food insecurity. Food pantries will remain a critical safety net for those not eligible for government programs. As a result, they should continue to be supported and potentially develop non-profit partners to build the infrastructure of food pantries, which are predominantly volunteer-based. Overall, this study provides a basis of the landscape of food pantries operating in Travis County, Texas and identifies the need for further analysis to determine best practices for effective food pantries.

Appendices

APPENDIX A: FOOD PANTRY SURVEY QUESTIONS

1. Name of food pantry
    - _____
2. Address (number, street, city, zip)
    - _____
3. Date
    - _____
4. Best Contact Information
    - Name _____
    - Email _____
    - Phone # _____
5. Operating Days (Circle all that apply)
    - Sunday
    - Monday
    - Tuesday
    - Wednesday
    - Thursday
    - Friday
    - Saturday
6. Operating hours (enter exact range)
    - Sunday
        - _____
    - Monday
        - _____
    - Tuesday
        - _____
    - Wednesday
        - _____
    - Thursday
        - _____
    - Friday
        - _____
    - Saturday
        - _____
7. Sidewalk
    - Yes
    - No
8. Sidewalk quality

- Good *(clean, clear sidewalk)*
- Fair *(some cracks and a few tufts of vegetation, but generally is passable)*
- Poor *(many cracks, lots of vegetation protruding between cracks, sides encroached by overgrown plants, etc.)*

9. Located on a busy street *(busy streets have speed limits of 35 mph or greater)*
    - Yes
    - No
10. Bike lane
    - Yes, with a physical barrier
    - Yes, with a defined line
    - No
11. Bus stop nearby
    - Yes, within 1 block
    - Yes, within 2-5 blocks
    - No
12. Parking lot
    - Yes
    - No
13. Parking lot capacity
    - <10 cars
    - 10-30 cars
    - >30 cars
14. How many people does this pantry serve, approximately, each weekday?
    - <25
    - 25-50
    - 51-100
    - 101-200
    - 201-500
    - >500
15. How many people does this pantry serve, approximately, each weekend?
    - <25
    - 25-50
    - 51-100
    - 101-200
    - 201-500
    - >500
16. If there was an emergency and no food could be delivered to this pantry, how many days could it operate on current stock and meet the food needs of all daily visitors?
    - _____
17. Does this food pantry have a licensed food permit?
    - Yes
    - No
18. Does anyone at this pantry have a food handlers certificate?
    - Yes, all servers

- Yes, a few servers
- No

Capacity

19. Currently, does this food pantry have
    - Refrigerator storage
        - Yes
        - No
    - Frozen storage
        - Yes
        - No
    - Non-perishable shelf/storage
        - Yes
        - No
    - Kitchen / food prep space
        - Yes
        - No
    - Seating for visitors
        - Yes
        - No
    - Eating area with tables for visitors
        - Yes
        - No
20. Where does this pantry receive donations from? (Circle all that apply)
    - Food Drives (schools, individuals, other organizations)
    - Restaurants
    - Grocery stores
    - Distribution centers
    - Central Texas Food Bank
    - Other (specify): _____
21. Where does this pantry receive the majority of its donations from? (Specify top three, i.e. Central Texas Food Bank, Wheatsville, Trader Joes, SNAP Kitchen)
    - _____
    - _____
    - _____
22. How are donations received?
    - Dropped off by donating location
    - Dropped off by volunteer
    - Picked-up by receiving location
    - Other (Specify) _____
23. How often are donations received?
    - Daily
    - Weekly

- Bi-weekly
- Monthly
- Varies (Please explain) _____

24. Does this pantry network with other food banks?
    - Yes, (specify which ones) _____
    - No
25. What happens to food that is not distributed/served? (Answer all that apply)
    - Compost
    - Used as animal feed
    - Thrown in dumpster
    - Share with other pantry or organization
    - Other (specify) _____
26. Could this pantry support additional food donations?
    - Yes
    - No
27. Under what parameters might this pantry be able to receive more donations (select all that apply and please estimate dollar amount needed for improvements)?
    - Increased storage capacity $_____
    - Expanded operating hours $_____
    - More staff $_____
    - Only certain food types (specify) _____, $_____
    - None, not interested in additional donations at this time
28. What foods are most requested at this pantry? (specify top three foods)
    1. _____
    2. _____
    3. _____
29. What are the pantry's greatest needs, with respect to food storage, donations, and visitors? (Circle top three)
    - More staff
    - More volunteers
    - More storage (specify) _____
    - More donations
    - Variety of food (specify which food(s) are/is needed) _____
    - Kitchen/food prep area
    - More funding
    - Vehicle for transporting food
    - Other (specify) _____

Food Stock

Please answer the following questions based on an average day's supply of food at this pantry.

Fruits and Vegetables

30. Fresh fruits
    - Always
    - Sometimes

- Rarely
- Never
- Not sure

31. Fresh vegetables
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
32. Canned fruit
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
33. Canned vegetables
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
34. Frozen fruit
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
35. Frozen vegetables
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure

Meat, Poultry, Fish & Plant-Based Protein

36. Frozen meals
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
37. Healthier meals (e.g. “low fat”, “low sodium”, “low calorie”, “healthy”, “light”, “lean”)
    - Always
    - Sometimes

- Rarely
- Never
- Not sure

38. Ground beef (fresh or frozen)
    - Always
    - Sometimes
    - Rarely
    - Never
39. Lean beef (>85%)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
40. Chicken breast (skinless or boneless, fresh or frozen, may include unflavored chicken breast strips, but not breaded chicken)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
41. Other poultry (e.g. ground turkey, turkey bacon, game bird, duck & goose)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
42. Finned fish (e.g. tilapia, salmon, tuna, cod, NOT breaded or salad)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
43. Shellfish (e.g. clams, crabs, mussels, oysters, scallops, shrimp):
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
44. Eggs (boiled, raw, liquid)
    - Always
    - Sometimes
    - Rarely
    - Never

- Not sure

45. Meat alternative (fresh, frozen, e.g. tofu, tempeh, burgers)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
46. Dried beans (e.g. black beans, pinto beans, garbanzo)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
47. Canned beans (e.g. black beans, pinto, NOT baked beans, refried or seasoned)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
48. Nuts/seeds (NOT honey roasted, trail mix, or seasoned nuts)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
49. Nut butter (NOT flavored. e.g. peanut, almond, cashew or sunflower)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
50. Canned protein (e.g. roast beef, mixed meats, chunk chicken, corned beef, Vienna sausage)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure

Breads and Cereals

51. Loaf bread
    - Always
    - Sometimes
    - Rarely
    - Never

- Not sure

52. 100% whole wheat (must say 100% whole wheat on the label)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
53. Corn tortillas
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
54. Cereal (any kind of cold cereal)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
55. Low sugar cereal (7g or less of sugar per serving: e.g. Kix, Cheerios, Wheaties)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
56. Rice (any kind of dry rice, NOT seasoned or flavored)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
57. Pasta (any kind of dry pasta, e.g. spaghetti, angel hair, egg noodles, NOT tortellini, ravioli or seasoned/flavored)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure

Dairy

58. Cow's milk
    - Always
    - Sometimes
    - Rarely

- Never
- Not sure

59. Low fat milk (1% or skim)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
60. Other dairy (e.g. butter, cream, hard cheese, soft cheese, infant formula, etc.)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure

Other

61. Soup(s) (canned or broth, NOT instant noodles or broth)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
62. Low-sodium soup(s) ("low" or "reduced sodium" or "Heart Healthy" in their name)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
63. Vegetable/canola oil
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure
64. Alternative oil (e.g. olive, sunflower seed, grapeseed, coconut, etc.)
    - Always
    - Sometimes
    - Rarely
    - Never
    - Not sure

APPENDIX B: FOOD PANTRY INDEX

Indicator	Question	Scoring
Food Availability		
Presence of Fresh or Frozen Fruits/ Vegetables	Q: 30, 31, 34, 35	Overall Score 0-12
Based on daily food supply	30. Fresh Fruits?	0-3: 0=never 1= rarely 2=sometimes 3= always
Based on daily food supply	31. Fresh vegetables?	0-3: 0=never 1= rarely 2=sometimes 3= always
Based on daily food supply	34. Frozen Fruits?	0-3: 0=never 1= rarely 2=sometimes 3= always
Based on daily food supply	35. Frozen Vegetables?	0-3: 0=never 1= rarely 2=sometimes 3= always
Presence of Meat, Eggs, Dairy	Q: 39, 40, 44, 59	Overall Score: 0-12
Based on daily food supply	39. Lean Beef (>85%)?	0-3: 0=never 1= rarely 2=sometimes 3= always
Based on daily food supply	40. Chicken breast (skinless or boneless, fresh or frozen, may include unflavored chicken breast strips, but not breaded chicken)	0-3: 0=never 1= rarely 2=sometimes 3= always

Based on daily food supply	44. Eggs (boiled, raw, liquid)	0-3: 0=never 1= rarely 2=sometimes 3= always
Based on daily food supply	59. Low-fat milk (1% or skim)	0-3: 0=never 1= rarely 2=sometimes 3= always
Food Pantry Infrastructure	Q19: A, B	Overall Score: 0-2
Currently	Refrigerator storage?	0-1: 0=no 1=yes
Currently	Frozen Storage	0-1: 0=no 1=yes
Food Accessibility		
Food Pantry Transit Accessibility	Q: 11	Overall Score: 0-2
Currently	11. Bus Stop Nearby?	0-1: 0=No 1= Yes, within 2-5 blocks 2=Yes, within 1 block

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